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Avalanche Notes

U.S. Forest Service
Westwide Avalanche Network

NOVEMBER 94

Weather

November produced record snowfalls from Alaska to California to Utah. Typically when Alaska gets hammered by storms, the western "lower 48" does not, and vice versa. That is because the storm track is seldom wide enough or aimed accurately enough to accomodate both areas. But it happened this month.

Alyeska, AK, recorded 28" of snow on the 2nd-4th, 24" on the 10th, and 28" on the 20th-22nd, wound up with 210% of normal, and set a new November snowfall record. Eaglecrest and Juneau, too, set new records for November snows. When Eaglecrest Ski Area opened for the season on November 18, already there was 80" of snow on the ground, and a storm on the 24th dropped another 30".

Snowfall exceeded 100" at all Westwide sites along the West Coast. In the Cascades of Washington, Stevens Pass recorded snowfall on all but 3 days of the month, and Crystal Mountain, too, recorded snowfall on most days. These areas battled avalanche cycles on the 9th, 16th-17th, and 25th-30th. Stevens Pass logged 144 avalanches on the 28th-30th.

In the Sierra of California, Alpine Meadows recorded 300% of its November norm and set a snowfall record; it is likely that Squaw Valley, Heavenly Valley and Kirkwood Meadows, too, set November snowfall records. Storms rocked the Sierra with regularity all month. On both the 5th and 10th, Heavenly got 18" and Alpine Meadows, 12". Between these storms, Alpine Meadows recorded 8.3" of rain on the 6th-7th. On the 16th-18th, 36" to 39" fell at all the Tahoe Basin sites, and then on the 25th-26th, another 39" fell at Alpine Meadows and Squaw Valley. Two widespread avalanche cycles resulted from the storms of the 16th-18th and 25th-26th.

In the Intermountain area, snowfall followed the pattern set along the West Coast. In Utah, storms on the 11th-13th snowed 25" at Alta and 33" at Snowbird; on the 16th-18th, Alta 45", Snowbird 36"; and on the 25th-28th, Alta 57", Snowbird 58". For the month, Alta recorded 184% of normal for its second snowiest November ever, while Snowbird recorded 210% and a new November record.

Bridger Bowl, MT, recorded 35" on the 27th-29th, and its 92" for the month may well be a record, but long-term November data is not available.

In Colorado, snowfall was near- to above-normal. Vail received 87% of normal; Monarch, 90%; Winter Park, 94%; and Berthoud Pass, 100%. Wolf Creek recorded 18" on the 4th and 20" on the 12th-13th and wound up with 110% of normal; Red Mountain Pass, 140%; and Gothic was helped by 30" on the 12th-14th and got 150%.

Summer of 1994

On July 23, 1994, two climbers on Mt. Hood, OR, were killed when a wet-snow avalanche buried them in a crevasse. These two deaths are added to the 1993-94 toll. You should update your records to increase 93-94 avalanche deaths from 11 to 13. Here are the details: Four climbers were roped together and descending the Cooper Spur route on an exceptionally hot afternoon -- 110F in the valley. The leader was glissading, fell, and pulled all four on a sliding fall. They managed to stop when the slope leveled out but then were hit by a wet-loose avalanche that they had triggered and was following them down the slope. The avalanche partly buried two men and carried the other two into a crevasse and buried them. They could not be recovered in time to save their lives.

Avalanche, October and November

The season's first two avalanche deaths occurred on October 15, 1994. Two climbers probably had reached the summit of 14,196-foot Mt. Belford in the Sawatch Range of Colorado. It was a celebration climb on the 27th birthday of one. On their descent they were apparently glissading in a gully and triggered a soft-slab avalanche at an elevation of 13,600 feet. The avalanche took them down the narrow, rocky gully. One was severely injured but managed to drag himself a short distance from the debris, where he died and rescuers found his body. The other remains deeply buried despite several recovery missions.

On November 6 at Snowbird, UT -- before the ski area had opened for the season -- a 27-year-old man was skiing alone and triggered and was buried by an avalanche. He was reported overdue, and the following morning a search team first spied the avalanche and then saw the victim's parka hood on the surface. He was very shallowly buried, was wearing a beacon and shovel, but was dead from injuries sustained in the fall through trees and over a rock cliff.

On November 2 at Hatcher Pass, AK, a 20-year-old man was last seen skiing alone in avalanche terrain. Searchers have found no sign of the missing skier who is presumed buried in one of about 10 fresh avalanches in the immediate area. His body will not likely be found until next summer. Avalanche Notes will not include this incident as an avalanche until confirmed at a later time.

Through November, 12 avalanche incidents have been reported, resulting in 16 people caught, 10 partly buried, 1 buried, 2 injured, and 3 killed.

Recoilless Rifle Explosion

On November 23 at Alpine Meadows, CA, a 106mm recoilless rifle exploded during a routine sighting and training session. A 42-year-old Forest Service employee was killed when hit by shrapnel. Miraculously, five other people standing on the gun tower escaped injury.

Two rounds had been fired before the accident occurred. These functioned perfectly and landed on target. The initial assessment is that, on the third shot, a low-order or partial detonation of the round occurred which blew off the last 2 feet of the barrel and sent shrapnel flying up to 600 feet away.

The Forest Service and Army are investigating the accident. Until further notice, the use of 106 rifles for avalanche work is banned. However, the Forest Service has allowed Alpine Meadows and Mammoth Mountain to continue to use 106's because they are irreplaceable parts of their control programs. These guns will be fired remotely from inside sandbag-and-steel bunkers.

* U.S. FOREST SERVICE
WESTWIDE WEATHER AND AVALANCHE NETWORK
FORT COLLINS, COLORADO

NOVEMBER 1994
SUMMARY OF WEATHER AND SNOW CONDITIONS

AREA	SNOWFALL				WATER EQUIVALENT								SNOW DEPTH				TEMPERATURE			WIND SPEED AND DIRECTION					
	TOTAL SNOW- FALL IN.	AVG DEN	MAX IN. E	D A	TOTAL WATER IN.	MAX IN. E	D A	NUMBER OF DAYS				D A	MAX IN. E	T MIN IN.	AVG IN.	MEAN MAX DEGREES F	MEAN MIN F	AVG F	AVG FOR MO. MPH	6 HOUR		FASTEST HOUR MPH	D A T E		
								T	GE	GE	GE									PERIODS GE 15	GE 20				
CENTRAL AND SOUTHERN ROCKY MOUNTAINS																									
ASPEN HIGHLANDS, CO	45.7	.09	6	13	4.20	.55	13	14	10	2	0	31	29	9	20	28.6	13.5	21.0	13.2	41	25	35	220	15	
BEAR LAKE, RMNP, CO	29.0	.07	5	9	1.90	.35	9	12	3	0	0	18	30	3	8	29.8	17.2	23.5	--	--	--	--	--	--	
BERTHOUD PASS, COLO	46.0	.08	9	9	3.51	.90	9	9	9	2	0	21	30	2	12	--	--	--	13.4M	32M	15M	--	--	--	
GOTHIC, COLO	75.5	.07	17	13	5.07	1.15	13	11	10	3	1	31	14	3	19	31.5	10.2	20.9	--	--	--	--	--	--	
KEYSTONE, COLO	26.1	--	5	4	--	--	--	--	--	--	--	15	22	6	9	27.9M	10.2M	19.1M	10.5M	19M	5M	--	--	--	
MONARCH, COLO	39.0	.06	7	20	2.53	.45	4	9	6	0	0	24	22	2	14	28.1M	12.4M	20.3M	--	--	--	--	--	--	
RED MTN. PASS, COLO	64.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TELLURIDE, COLO	74.5	--	9	13	--	--	--	--	--	--	--	36	22	7	24	--	--	--	--	--	--	--	--	--	
VAIL, COLO	52.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WINTER PARK S.A., CO	63.5	.07	9	9	4.49	.90	9	12	10	2	0	32	22	8	21	26.4	11.5	19.0	8.1M	11M	2M	27	170	1	
WOLF CREEK, COLO	70.8	.11	18	4	7.80	2.30	4	10	9	5	2	57	18	20	45	29.0M	9.8M	19.4M	--	--	--	--	--	--	
INTERMOUNTAIN																									
ALTA, UTAH	152.0	.07	30	16	10.12	2.05	16	--	--	--	--	79	28	20	43	30.0	10.0	20.0	12.8	18	16	--	--	--	
BRIDGER BOWL, MONT	92.0	.06	15	17	5.75	.75	7	12	10	7	0	65	29	23	38	28.8	14.8	21.8	11.5M	40M	9M	29	250	19	
SNOWBIRD, UTAH	150.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WEST COAST																									
ALPINE MEADOWS, CAL	117.0	.12	29	26	22.16	7.60	6	14	13	11	7	--	--	--	--	31.3	20.9	26.1	--	--	--	--	--	--	
ALYESKA, ALASKA	130.5	.06	24	10	9.33	2.32	3	13	11	6	2	82	29	24	57	22.0	13.3	17.7	5.1	0	0	19	160	14	
CRYSTAL MTN 1, WASH	113.7	--	14	2	--	--	--	--	--	--	--	60	27	18	41	31.1	21.3	26.2	14.1	56	32	55	240	30	
HEAVENLY VALLEY, CAL	105.0	--	27	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
KIRKWOOD MEADOWS, CA	119.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
SNOQUALMIE PASS I-90	126.3	.09	15	4	20.30	4.25	1	19	19	14	6	59	29	17	36	35.3M	24.1M	29.7M	5.8M	1M	0M	--	--	--	
STEVENS PASS, WASH	119.0	.07	12	28	9.52	2.00	30	18	12	8	2	64	29	38	48	29.7M	21.4M	25.6M	--	--	--	--	--	--	

-- DATA INCOMPLETE OR MISSING

M-ONE OR MORE DAYS OF RECORD MISSING-IF AVERAGE VALUE IS ENTERED, LESS THAN 10 DAYS RECORD IS MISSING

IF M IS ENTERED IN WIND SPEED COLUMN, LESS THAN 37 6-HOUR PERIODS ARE MISSING

GE--GREATER THAN OR EQUAL TO

U.S. FOREST SERVICE
WESTWIDE WEATHER AND AVALANCHE NETWORK
FORT COLLINS, COLORADO

NOVEMBER 1994
AVALANCHE SUMMARY

AREA	TOTAL	TOTAL	DATES OF		MAX IN ONE DAY	DAYS	NUMBER OF DAYS WITH		TYPE OF AVALANCHE						FRACTURE LINE HEIGHTS IN FEET			VERTICAL DESCENT IN FEET				AVALS ACROSS MAJOR ACCESS ROADS NO.		
	THIS MONTH NO.	THIS WINTER NO.	F T	L T			A V A L S	S L U F S	A R T I F C L	N A U R A L	SLABS			L O S E	G E 2	G E 4	G E 6	G E 200	G E 500	G E 1000	MAX FEET			
											H	S	O										W	O
-----NUMBER-----																								
CENTRAL AND SOUTHERN ROCKY MOUNTAINS																								
ASPEN HIGHLANDS, COL	9	9	6	30	2 30+	6	0	4	5	0	9	0	0	4	0	0	6	6	5	1200	0			
BERTHOUD PASS, COLO	8	8	18	30	4 23	4	0	2	6	0	8	0	0	4	1	0	6	0	0	400	1			
BRECKENRIDGE, COLO	36	36	15	30	9 29	8	0	36	0	9	27	0	0	27	1	0	31	0	0	475	0			
COPPER MT, COLO	22	22	8	29	8 29	7	0	21	1	10	12	0	0	20	0	0	13	7	0	800	0			
CRESTED BUTTE, COLO	15	15	13	26	4 24+	5	0	15	0	1	14	0	0	14	2	0	9	1	0	550	0			
GOthic, COLO	17	17	13	29	5 22+	6	0	0	17	0	9	0	8	5	2	0	17	13	6	2500	0			
LOVELAND PASS U.S. 6	25	25	18	30	8 29	7	0	19	6	0	25	0	0	14	0	0	22	11	0	900	2			
MONARCH, COLORADO	2	2	24	28	1 28+	2	0	0	2	2	0	0	0	1	0	0	2	1	0	650	0			
RED MTN PASS U.S.550	29	29	12	30	13 12	7	0	4	25	1	23	0	5	0	0	0	9	4	2	1200	5			
TAOS, NEW MEXICO	5	5	12	12	5 12	1	0	0	5	0	5	0	0	0	0	0	5	0	0	300	0			
TELLURIDE, COLO	21	21	5	29	6 13	6	0	15	6	2	19	0	0	17	0	0	15	8	4	1200	0			
URAD MINE, COLO	2	2	23	24	1 24+	2	0	0	2	0	2	0	0	1	0	0	2	0	0	250	0			
WOLF CREEK, COLO	15	15	4	14	6 4	6	0	12	3	0	15	0	0	8	1	0	4	0	0	310	0			
INTERMOUNTAIN																								
ALTA, UTAH	157	157	6	21	23 28	12	3	144	13	27	130	0	0	91	24	2	79	47	9	1200	0			
BIG SKY, MONT	41	41	7	30	14 27	7	0	34	7	5	36	0	0	4	0	0	40	24	4	1200	0			
BRIDGER BOWL, MONT	61	61	17	30	28 27	7	0	59	2	0	53	0	8	1	0	0	61	38	2	1100	0			
WEST COAST																								
ALPINE MEADOWS, CAL	128	128	16	26	69 26	5	0	124	4	2	126	0	0	4	2	2	104	5	0	600	0			
ALYESKA, ALASKA	31	31	3	27	7 18+	8	0	6	25	0	31	0	0	26	7	1	30	23	12	1500	0			
CRYSTAL MTN, WASH	129	129	9	29	32 26	11	0	111	18	0	109	13	7	7	0	0	127	71	4	1000	0			
EAGLECREST, ALASKA	59	59	10	26	23 16	9	0	56	3	6	38	0	15	23	10	4	52	21	6	1500+	0			
HEAVENLY VALLEY, CAL	5	5	26	27	4 26	2	0	5	0	0	5	0	0	2	0	0	5	3	0	800	0			
JUNE MOUNTAIN, CALIF	7	7	25	26	4 26	2	0	7	0	0	7	0	0	1	1	0	2	0	0	300	0			
MAMMOTH MTN, CALIF	51	51	11	26	20 16	7	0	51	0	1	49	0	0	12	6	6	0	0	0	100	0			
MT. HOOD MEADOWS	47	47	16	28	14 27	8	0	47	0	0	47	0	0	5	0	0	28	11	0	800	0			
SNOQUALMIE PASS I-90	19	19	28	29	16 29	2	0	3	16	0	19	0	0	0	0	0	19	9	5	1700	0			
SQUAW VALLEY, CALIF	129	129	10	26	56 26	6	1	129	0	0	129	0	0	23	0	0	73	16	1	1000	0			
STEVENS PASS, WASH	265	265	4	30	65 29	13	0	265	0	0	235	17	13	47	0	0	0	0	0	0	0			
SUGAR BOWL, CALIF	3	3	25	26	2 25	2	0	3	0	0	3	0	0	1	0	0	1	0	0	300	0			
WHITE PASS, WASH	13	13	4	30	6 4	3	0	12	1	0	13	0	0	0	0	0	5	0	0	300	0			

-- = DATA INCOMPLETE OR MISSING
GE = GREATER THAN OR EQUAL TO
+ = ALSO OCCURRED ON OTHER DATES